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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,767	04/09/2004	Michael Tolbert Myers	SHEL.110604 / TH2478	1457

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EXAMINER	
SAINT SURIN, JACQUES M	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/821,767	MYERS ET AL.	
	Examiner	Art Unit	
	Jacques M. Saint-Surin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,17-30 and 34-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *52-63* is/are allowed.

6)☒ Claim(s) *1-25,34-39,41-47,49-51 and 66-75* is/are rejected.

7)☒ Claim(s) *26-30,40 and 48* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/19/06 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-15, 17-30, 34-75 have been considered but are moot in view of the new ground(s) of rejection.

3. The indicated allowability of claims 14-15, 17-19, 41-51, 6-10, 13, 19 and 26-30 is withdrawn in view of the newly discovered reference(s) to Goodwin et al. (US Patent 6,490,916 B1). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims1-6, 19-22, 25, 37, 43 and 49--50 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodwin et al. (US Patent 6,490,916 B1) herein after Goodwin.

Regarding claims 1 and 14, Goodwin discloses an apparatus (see: Fig. 10) for acoustically analyzing a fluid comprising:

a chamber (sample bottle 300) for holding the fluid :

a transmitter (322) positioned within the chamber (300) for transmitting an acoustic signal through the fluid;

a reflector (324) positioned within the fluid for reflecting the acoustic signal;

and a receiver (322)positioned within the chamber (300) for detecting a reflection of the acoustic signal;

wherein said apparatus is incorporated in a downhole sampling (the sample bottle can be used either downhole, as part of a downhole sampling tool, or on the surface, see: col. 11, lines 4-6).

10/21/06

Regarding claim 14, it is similar in scope with claim 1 and therefore, it is rejected for the reasons set forth for that claim.

Regarding claims 2 and 15, Goodwin discloses the chamber (300) comprises a sealed first end (302) a piston slidably (movable piston 320) within a second end of the chamber (300) and a conduit (fluid inlet 318) for introducing the fluid into the chamber (300).

Regarding claims 3-4, Goodwin discloses a servomotor (piezoelectric crystals 340). Goodwin further discloses when detecting bubble point pressure, the sample fluid is inserted from inlet line 314 through valve 312. If there is a great difference between the pressure of the fluid and the expected bubble point pressure, the pressure can be altered using the hydraulic system so as to bring the pressure of the fluid to within the range of the bubble point pressure. Preferably the pressure of the fluid is within the range of pressure generating capabilities of the acoustic transducer. The steps

illustrated in FIG. 8 then can be used to detect the bubble point pressure either in a burst or continuous mode (see: col. 11, lines 7-16). Goodwin further discloses a series of sensors are normally used that determine pressure, temperature, flow rate, and physical properties of the reservoir fluid combined with one or more valves or chokes (col. 6, lines 6-12).

Regarding claims 5, 21 and 43 Goodwin discloses transducer 322 for generating and detecting the presence of bubbles in the fluid. Goodwin further discloses there are many types of acoustic transducers that can be used for this purpose ranging from capacitive to piezoelectric devices. In addition, Goodwin discloses bubbles generated by transducer 150 could be detected with bubble detection transducers 156, which are preferably located up and down stream of point 158. However, according to a preferred embodiment, the same transducer used to form the bubbles could be used for bubble detection.

Regarding claim 6, Goodwin discloses a piston 320 mounted within the chamber 300.

Regarding claim 20, Goodwin discloses a method for acoustically analyzing a fluid in a chamber using a transmitter, a substantially stationary reflector movably positioned within the fluid inside the chamber, and a receiver, the method comprising the steps of:

drawing a formation fluid from an earth formation (production tubing 204 is shown penetrating land surface 202, and down through to the reservoir 206, see: col. 6, lines 17-19); and under in-situ conditions (real-time monitoring);

transmitting (220) an acoustic signal from the transmitter through the fluid; and detecting (222) reflections of the acoustic signal from the reflector at the receiver. (See also col. 6, lines 13-65).

Regarding claim 22, Goodwin discloses although sensors 220 are shown in the production zone (col. 6, lines 31-32.

Regarding claim 25, Goodwin discloses advantageously, the arrangement shown in FIG. 6 can also be used for acoustic wave time-of-flight and impedance measurements to provide flow rate, sound speed, viscosity and density (see: col. 9, lines 16-19 and col. 7, lines 10-14).

Regarding claim 37, Goodwin discloses the sample bottle can be used either downhole, as part of a downhole sampling tool, or on the surface, see: col. 11, lines 4-6).

Regarding claim 49, Goodwin discloses the preferred method of determining the pressure applied to the fluid is by using finite difference methods to solve the equations for acoustic propagation related to intensities of waves traveling through different media. The physical properties (such as speed of sound viscosity and density) of the materials used to construct the transducer, the fluid surrounding it, and the physical dimensions are preferably used as inputs to a suitable program for finite element solutions to propagation of acoustic waves. The acoustic impedance of a material is defined as the product of its mass density and sound speed. In one implementation of the invention, the acoustic impedance of the transducer is approximately matched to the acoustic impedance of the fluid, in the absence of bubbles. At the first appearance

of a bubble, both the density and the sound speed of the fluid decrease (col. 8, linss 25-35).

Regarding claim 50, Goodwin discloses a reflector (324) which is movably positioned.

Regarding claims 64-65, Goodwin discloses a static piston 320.

Regarding claim 66, it is similar in scope with claim 1/2/3. Therefore, it is rejected for the reasons set forth for that claim.

Regarding claim 67, Goodwin discloses a conduit (fluid inlet 314).

Regarding claim 68, Goodwin discloses piezoelectric crystal 340.

Regarding claim 69, Goodwin discloses when detecting bubble point pressure, the sample fluid is inserted from inlet line 314 through valve 312. If there is a great difference between the pressure of the fluid and the expected bubble point pressure, the pressure can be altered using the hydraulic system so as to bring the pressure of the fluid to within the range of the bubble point pressure. Preferably the pressure of the fluid is within the range of pressure generating capabilities of the acoustic transducer. The steps illustrated in FIG. 8 then can be used to detect the bubble point pressure either in a burst or continuous mode (see: col. 11, lines 7-16). Goodwin further discloses a series of sensors are normally used that determine pressure, temperature, flow rate, and physical properties of the reservoir fluid combined with one or more valves or chokes (col. 6, lines 6-12).

Regarding claims 72-75, Goodwin discloses transducer 322 for generating and detecting the presence of bubbles in the fluid. Goodwin further discloses there are

many types of acoustic transducers that can be used for this purpose ranging from capacitive to piezoelectric devices. Goodwin further discloses a movable piston 320.

Claim Rejections - 35 USC § 103

6. Claims 7-8, 44-45 and 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodwin et al. (US Patent 6,490,916) in view of Harth, III et al. (US Patent 5,661,241).

Regarding claims 7-8, 44-45 and 71-72, Goodwin does not disclose or suggest a square-wave pulser/receiver connected to the transducer and an oscilloscope connected to the square-wave pulser/receiver. Harth, III shows in Fig. 4 pulser receiver 36 connected to oscilloscope 32 and transducer 40. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Goodwin the techniques of Hart, III because it would provide ultrasonic transducer 40 which detects the ultrasonic pulses from both the base metal/clad interface and cladding/air interface and it, in combination with the pulser/receiver 36, converts these pulses into electrical signals and the high frequency oscilloscope 32, or for that matter any device capable of displaying high frequency wave forms in real time, displays the transmitted and received wave forms thereby making the above combination more effective.

7. Claims 9-12, 17-19, 23-24, 34-36, 38-39 and 41-42, 46-47 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodwin et al. (US Patent 6,490,916) in view of Harth, III et al. (US Patent 5,661,241) and further in view of Wilkins (US Patent 5,900,546)..

Regarding claims 9-13, 17-18, 23-24, 34-36, 38-39, 41-42 and 46-47, Goodwin in view of Harth, III does not disclose the reflector is a disc and a ring positioned opposite the transducer relative to the piston. Wilkins discloses a piston 29 is located inside the tube 21, freely slidable therein and has a magnet 32 fixed to the bottom and which is magnetically coupled to the magnet 27 in the float (to meet the limitations of claims 11 17 and 51). The top of the piston provides a flat, circular, ring-shaped surface 34 at a known distance from the flat circular bottom surface 36 of the bore (see: col. 2, lines 38-50). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Goodwin in view of Hart, III the techniques of Wilkins because it would provide a piston having a particular shape with a known distance between reflecting surfaces and which is used in the computer for a reference and applied to the liquid level indicating data to produce an output for temperature variations thereby, making the above combination more efficient.

Allowable Subject Matter

8. Claims 52-63 are allowable over the prior art of record.

9. Claims 26-30, 40 and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is

(571) 272-2206. The examiner can normally be reached on Mondays to Fridays between 10:30 A.M and 800 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jacques M. Saint-Surin
October 02, 2006

HEZRON WILLIAMS
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